

THE IDENTITY OF *ALOE SECUNDIFLORA* ENGLER

By G. W. REYNOLDS.

(With Plates VIII—X.)

The type of *Aloe secundiflora* is Volkens 530, in Herb. Berlin, a photograph of which has been sent to me by Prof. G. Werdermann, Dahlem. The type locality is (from the German): "Kilimanjaro District: At the foot of the Rhino Hills (Nashornhügels), in stony ground with Euphorbia trees; leg. Volkens, 4 July 1893".

The present place-name is Kifaru, which, in Swahili means Rhinoceros. Kifaru is situated at the northern extremity of the North Pare Mountains at approximately 3°35'S 37°33'E which is 9 miles south of Himo, Himo being 18 miles east of Moshi, Tanganyika Territory.

I visited the Rhino Hills in April 1952 (with Mr. P. R. O. Bally, botanist at the Coryndon Museum, Nairobi) for the purpose of investigating *A. secundiflora* at its type locality. Large numbers of plants were found at Kifaru in arid country, with tree Euphorbias, *Acacia xanthophloea*, and Dum Palms (*Hyphaene*) nearby.

The identity of *A. secundiflora* can now be established with certainty, but two other species became involved, namely *A. engleri* Berger, and *A. floramaculata* Christian.

A. engleri was collected by Engler in 1902 and described by Berger in Engler *Bot. Jahrb.* 36: 60 (1905), the type locality being (from the German) "Kilimanjaro District: Between Taveta and the Bura Hills".

Mr. Bally and I journeyed from Taveta (in Kenya Colony, near the Tanganyika border) eastwards to the Bura Hills, which are at the western end of the Teita Hills, to search for *A. engleri*. Large numbers of plants were found—many flowering—near Maktau, 34 miles east of Taveta, 38 miles west of Voi, and west of the Bura Hills, in Kenya Colony, at approximately 3°26'S 38°9'E.

Prof. G. Werdermann has also kindly sent me a photograph of the type material of *A. engleri* in Herb. Berlin. From this photograph, and from the description and locality, there can be no doubt whatever that the Maktau plants belong to *A. engleri*, but an examination revealed that they were, in all characters, identical with *A. secundiflora* at Kifaru. Consequently, *A. engleri*, being a later publication, cannot be upheld, and must go into synonymy.

Berger's Fig. 94 in Engler *Pflanzenr.* Liliac.-Alcin. 252 (1908) of a whole plant of *A. engleri* shows the rosette of leaves approximately

correctly, but the inflorescence far from agrees with the type material, it does not fit the description, and is in all ways entirely misleading; in fact, it could only have been founded on imagination. Berger's figure of a flower natural size is also wrong, and far from resembles the actual flower.

A difficulty with Berger's figures is that, with most of the Tropical Aloes, he has obviously founded those of flowers natural size, on dried pressed Herbarium material, and has depicted shapes which he *imagined* the flowers had when alive, with the result that such figures are mostly inaccurate and misleading.

Aloe species which can readily be separated when alive often look much the same when pressed and dried. With Aloe, no sooner are racemes of flowers scalded, pressed and dried in the field, than some distinguishing characters are irretrievably lost. This applies especially to the small white specks or spots found in the perianth of both *A. secundiflora* and "*A. engleri*", a character hitherto unrecorded in these two species.

The spotting of the perianth is one of the main characters noted by the late Mr. H. Basil Christian when describing his *A. floramaculata* from the Makumba Valley (south of Mwanza and Lake Victoria), Shinyanga District, Tanganyika Territory. Mr. Christian submitted material to Dr. J. C. Hopkins, Chief Botanist and Plant Pathologist, Dept. of Agriculture, Salisbury, who reported: "The pale specks on flowers are not due to a pigment, but are pale translucent spots or stripes caused by the presence of bubbles of gas in the sub-epidermal tissue. The gas does not appear to be enclosed in any special structure."

Since the character "spotted perianth" was not mentioned in the description of *A. secundiflora*, Mr. Christian could hardly have been expected to know of it, while an examination of the actual type material could not have revealed it, since the minute gas-bubble spots disappear when flowers are pressed, and do not re-appear when dried flowers are boiled up.

I studied and photographed the type plant of *A. floramaculata* at Ewanrigg when flowering there in June 1939, and in the light of further knowledge, it now proves to be conspecific with *A. secundiflora*.

Subjoined is the synonymy, with a description based on personal observations of large numbers of plants over a wide area in parts of Tanganyika and Kenya.

A. secundiflora Engler in *Pflanzenwelt Ostafrikas* 140 (1895); Baker in Th. Dyer *Fl. Trop. Afr.* 7: 459 (1898); Berger in Engler *Pflanzenr. Liliac.-Aloin.* 267 (1908).

—*A. engleri* Berger in Engler *Bot. Jahrb.* 36: 60 (1905), in Engler *Pflanzenr. Liliac.-Alcin.* 252 (1908).

—*A. floramaculata* Christian in *Journ. S.A. Bot.* 6: 182 (1940).

Plants acaulescent or very shortly caulescent; mostly solitary, or in small groups, sometimes soboliferous.

Leaves about 20, densely rosulate, erectly spreading, slightly recurved near apex, ovate-lanceolate-attenuate, averaging 45cm. long, 12—14cm. broad at base, dull green, rather glossy, without spots; *upper surface* flat low down, slightly canaliculate towards apex; *lower surface* rather flat low down, more rounded upwards; *margins* obtuse, sinuate-dentate, armed with laterally compressed deltoid teeth which are pungent, brown with paler tips, straight or hooked forward, averaging 4mm. long, 15mm. distant, the teeth isolated in younger leaves, sometimes joined by a horny brown marginal edge in older leaves. Sap dries yellow.

Inflorescence a divaricately branched panicle 1—1.75 met. high, sometimes 2 simultaneously, branched from below the middle with about 10—12 slender oblique branches, sometimes producing 50 and more racemes per inflorescence, the lowest branch subtended at base by a broadly ovate, thin, scarious, pale-brown, 7-nerved bract about 12mm. long, 20mm. broad at base.

Peduncle brown with a grey powdery bloom, plano-convex and 35mm. diam. at base, terete upwards, the branches slender, oblique.

Racemes more or less oblique, 15—20cm. long, rather laxly about 18-flowered, the flowers more or less secund, the buds rose-pink and greyish tipped, more clearly spotted, the open flowers usually less clearly spotted; the buds suberect and grouped along the top of branch, open flowers cernuous to pendulous, after pollination the drying perianth and fruit becoming erect.

Bracts ovate-acute or deltoid, thin, scarious, about 4—5mm. long, 4—5mm. broad at base, 3—5-nerved.

Pedicels 8—10mm. long.

Perianth rose-pink to dull scarlet-red, paler at mouth, obscurely to clearly minutely white-spotted, averaging 35mm. long, cylindric, basally flat and not at all stipitate, 9mm. diam. over the ovary, slightly constricted above the ovary, thence slightly trigonous and slightly enlarging to the open mouth; *outer segments* free for half their length, with paler margins and subacute spreading apices, obscurely 3-nerved, the nerves turning brownish at apex; *inner segments* themselves free but dorsally adnate to the outer and with broad pale border, with 3 congested nerves forming a keel throughout, the apices more obtuse and more spreading than the outer.

Filaments palest lemon, filiform-flattened, the 3 inner narrower and lengthening in advance of the 3 outer, with their *anthers* in turn exerted 5mm.

Style lemon, filiform, with *stigma* at length exerted 6mm.

Ovary pale green, 6mm. long, 3mm. diam., finely 6-grooved.

Note.—The soboliferous form occurs in the localities furthest west, i.e. the Shinyanga and Biharamulo Districts. In the Rift Valley (Lake Naivasha area) small groups are found, increasing by division and not from suckers. In localities furthest east, i.e. Kifaru, Maktau, Kinango, Mariakani, plants are mostly solitary and not in groups.

DISTRIBUTION.

A. secundiflora appears to be one of the most frequent and most widely distributed species of *Aloe* in the northern portion of Tanganyika Territory, and in parts of Kenya Colony. It is found from a few hundred feet above sea level to over 6,000 ft. in the Rift Valley and near Nanyuki, on the Equator.

From a few recorded localities, but mostly from personal observations, the following is the distribution as at present known:

Tanganyika Territory: From Biharamulo in the north-west, eastwards through the Shinyanga, Singida and Kondoa Districts to Arusha, Moshi, Lake Chala, and north of Kilimanjaro; from the northern end of the North Pare Mountains southwards to Kisangiro, and the Mwembe and Vudea valleys on the western side of the Southern Pare Mountains; also 18 miles north of Tanga.

Kenya Colony: Abundant near Kinango (36 miles west-south-west of Mombasa) and for the next 30 miles along the Tanga road; from Mariakani (20 miles north-west of Mombasa) along the road to Voi, thence westwards to Maktau and Taveta; Sultan Hamud, occasional on the Kapiti Plains; Machakos; at the foot of Lukenya Hill; abundant at the Athi River road bridge, Stony Athi (20 miles south-east of Nairobi); east of Thika, near Donyo Sabuk; in the Kedong Valley (north-west of Nairobi); Mt. Margaret; near Mt. Longonot and at the southern end of Lake Naivasha; near Elmenteita; southwards along the Rift Valley to Ologesailie Prehistoric Site; Kajiado; near Nanyuki (122 miles north of Nairobi); tremendous quantities 34 miles west of Nanyuki near the Mutara Police Post where, in April, the countryside is pink with flowers for a few miles; in the Ngobit valley 16 miles south-east of Mutara.

Flowering period varies from April to August, depending on the rains, and the locality.



FIG. 1.

PLATE VIII: *Aloe secundiflora* Engler.



FIG. 2.

FIG. 1: Plant fl. 28 March 1952, 22 miles west of Arusha, Tanganyika Territory.
FIG. 2: Flowers 1/1, from bud to post-pollination stage.



Fig. 1.

PLATE IX: 1. *secundiflora* Bngler.



Fig. 2.

Fig. 1: Plant fl. 30 March 1952, near Maktau, 34 miles east of Taveta, Kenya Colony. (= *A. engleri* Berger).
Fig. 2: Flowers 1/1 from bud to post-pollination stage.



FIG. 1.



FIG. 2.

PLATE X: *A. secundiflora* Englert.

FIG. 1: Plant fl. 19 April 1952, near southern end of Lake Naivasha, Rift Valley, Kenya Colony.

FIG. 2: Type plant of *A. florimaculata* Christman from Shimanya Dist., Tansanyika Territory, fl. 22 June 1939, at Ewanrigg, near Salisbury, S. Rhodesia.